Fisheries and Oceans / Pêches et Océans
Newfoundland Region

DFO Science
Stock Status Report D2-04

ATLANTIC SALMON

INSULAR NEWFOUNDLAND, SOUTH NEWFOUNDLAND, SALMON FISHING AREAS 9-11

Background

There are 49 scheduled rivers along this section of the south coast. Of these, river specific assessments are carried out on Biscay Bay River and Rocky River (SFA 9), Northeast River (Placentia) (SFA 10), and Conne River and Little River (SFA 11) (Fig. 1). Historically, rivers in this area have been characterized by runs comprised of in excess of 90% small salmon. During the five year interval prior to the moratorium (1987-91), the commercial salmon fishery took an estimated 330 t or about 136 thousand salmon, of which the large salmon component made up 43% of the catch by weight or 24% by number. Since the moratorium, the proportion of large salmon has increased in Northeast River (Placentia) relative to the 1984-91 period, but has either decreased (Rocky River) or shown no change in the other rivers assessed. Most large salmon are repeat spawning one-sea-winter (1SW) salmon.

Bay d'Espoir is the site of an aquaculture industry utilizing rainbow (steelhead) trout and Atlantic salmon. Numbers of both of these species have escaped sea cages and entered Conne River. Rainbow trout have also been documented to occur in three other inner Bay d'Espoir rivers. Additional escapements of both species occurred in 1996 including over 100,000 salmon parr (Saint John River, N.B. stock) that reportedly escaped during a winter storm in February 1996. Accurate information on actual escapees from aquaculture operations are difficult to obtain. Test fisheries for rainbow trout that had been conducted in Bay d'Espoir during May and September 1995, were not repeated during 1996. A rainbow trout fish-out pond also operated at St. Veronica's, Bay d'Espoir.

Little River was stocked with Atlantic salmon swim-up fry for several years, ending in 1993. However, stocking resumed in 1996. Atlantic salmon broodstock were removed from Little River again in 1996. Broodstock was taken from Conne River in 1995 but resulting progeny were not stocked. Survivors from an experiment using wild Conne River salmon smolts that were reared at an aquaculture cage in Roti Bay contributed 5% of the egg deposition in Conne River in 1996. The status of stocks is assessed on the basis of the proportion of the conservation egg deposition achieved in a given year and the trends in abundance of various life stages.

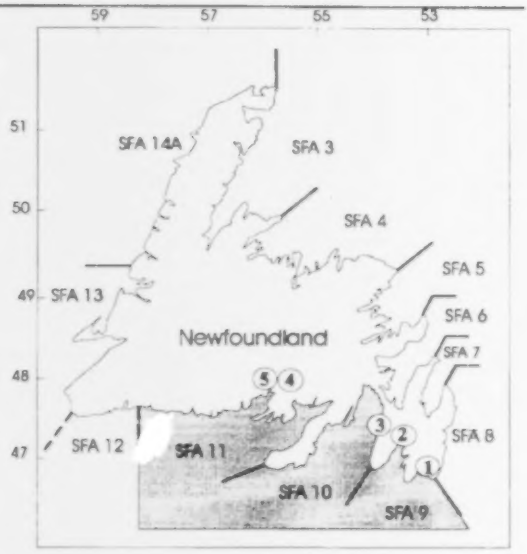

Figure 1. Map of Newfoundland showing the locations of Salmon Fishing Areas 9-11, and assessment facilities: (1) Biscay Bay, (2) Rocky, (3) Northeast, (4) Little, and (5) Conne rivers.

The Fishery

In 1996, Conne River was closed to recreational fishing and there was no First Peoples' food fishery. Little, Colinet and Rocky rivers were closed to recreational fishing in 1996. Rivers in SFAs 9 and 10 were opened to hook-and-release fishing two weeks earlier than usual in 1996 after which time retention of catch was permitted until the end of the season.

Recreational effort for SFAs 9-11 during 1996 was the highest on record and was 18% greater than the previous year.

Canada

Angled catch of small salmon (retained plus released fish) in 1996 totaled 9923 small salmon, and increased 27% over 1995 and was also greater than the 1986-91, and 1992-95 means (Fig. 2). CPUE increased over 1995 but was lower than the 1986-91 means. Compared to the recreational fishery quota years 1992 and 1993, the number of small salmon retained in 1996 (7498) was well above that of both years, and was the highest recorded since 1988.

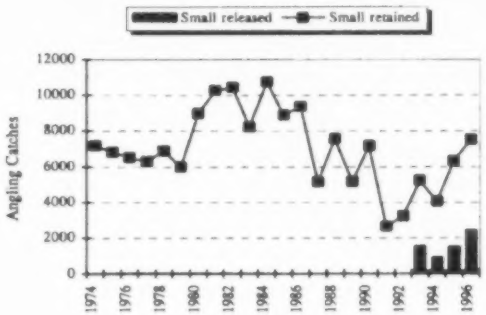

Figure 2. Recreational catches of small salmon in Salmon Fishing Areas 9-11, 1974-96.

Resource Status

Returns

Indices of abundance were from counts of small and large salmon for Conne River, Little River, Northeast River (Placentia), Rocky River, and Biscay Bay River. Counts of small salmon during the moratorium years (1992-1996) decreased from pre-moratorium counts in Biscay Bay and Conne River but increased in Northeast River (Placentia) and Rocky River. Counts of large salmon decreased at Conne River. For most rivers, there have been counts in some pre-moratorium years that were higher than those experienced during the moratorium. Sea survival of smolts to adult small salmon increased to the highest values recorded at Northeast Brook (Trepassey) and Rocky River in 1996, while at Conne River sea survival was the highest since 1989. Conne River, however, has experienced higher survivals in the past when the commercial fishery was still in operation. Overall, sea survivals remain low given the complete closure of commercial fisheries. This is still indicative of high or above average natural mortality at sea.

During commercial fishery moratorium years, total numbers of small salmon returning to rivers are assumed to be equivalent to the total numbers produced. Prior to the moratorium, total production included returns to rivers plus estimated commercial catches. Thus while returns to some rivers have shown some overall improvement, total production sizes are low compared to pre-moratorium levels.

In 1996, of the salmon sampled entering Conne River during June and July, 6% possessed net marks implying some fish are still encountering gear, legal or illegal, while migrating to their home river.

Egg depositions relative to conservation

Of the rivers assessed, the conservation egg deposition requirements in 1996 were achieved in Northeast River (Placentia) (736%), Biscay Bay River (117%) and Little River (298%) (Fig. 3). Conne River is assessed against a Management Target, which is greater than the corresponding conservation requirement. In 1996, the Management Target was attained (112%) for the first time since 1990. Rocky River achieved 34% of its conservation requirement. Additional information on

individual river assessments for Conne River, Little River, Northeast River (Placentia), Rocky River, and Biscay Bay River are provided in the accompanying summary sheets. Egg-to-smolt survival has been increasing at Conne River. This is coincident with better freshwater environmental conditions, but also coincident with declining egg deposition rates per unit of fluvial rearing habitat.

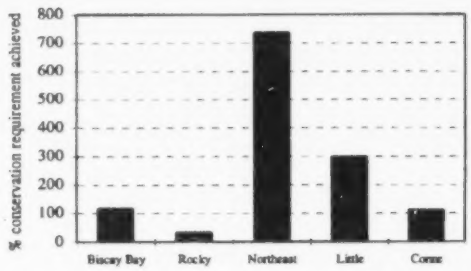

Figure 3. Egg depositions, expressed as a percentage of conservation requirements, in Biscay, Rocky, Northeast, Little, and Conne rivers in 1996. For Conne River, egg deposition is compared to the Management Target.

Environmental considerations

Several rivers in SFA 9 were closed to angling in mid-August due to low water levels and high water temperatures. Similarly, rivers in SFA 10 were closed anywhere from 9 to 25 days in August. A number of SFA 11 rivers were also closed, generally from mid-August until September 2.

Spring environmental conditions at Conne River improved relative to past years, and an air temperature index for the period April 1-May 15 was the warmest recorded since 1988. Previously, this index was directly associated with the timing of the smolt migration, with later runs occurring in colder years. In addition, run timing was also related to subsequent sea survival. The warmer spring temperatures resulted in the earliest smolt run at Conne River during the 10 years that monitoring has been carried out. Marine conditions in 1996, as measured by sea surface temperatures, appear to be improving relative to past years.

Outlook

Short-term

Improved freshwater conditions in recent years, as determined from studies in this region (e.g. Conne River) and other parts of Newfoundland, suggest increased smolt production and the possibility for improved adult returns. At Conne River and Rocky River, the highest smolt migrations on record occurred in 1996 while the smolt run at Northeast River (Trepassey) was among the highest recorded. The trend to increased sea survival at Conne River, if continued there and in other rivers, should also contribute to better overall escapements to south coast areas in 1997. A sea survival approximating that of 1996 would result in small salmon returns that would easily exceed those of 1996. The early smolt run timing at Conne River is also suggestive of improved adult returns in 1997.

At Biscay Bay River, returns in 1997 are anticipated to be well above the conservation requirement. In contrast, Rocky River is not anticipated to reach its conservation requirement.

Management considerations

Conne River is currently managed against a Management Target rather than a conservation requirement. The management

target was based upon the estimated number of spawners required to produce the highest recorded returns to the river, which occurred in 1987. The returns were adjusted to account for the total population prior to any sea fisheries by using a assumed commercial exploitation rate. Considerations for harvests should be done pending inseason reviews carried out during the latter part of June, 1997. In general, south coast rivers have not shown consistent increases in salmon returns resulting from the moratorium. Thus, there are still concerns about the health of these stocks.

For more information:

Contact: Rex Porter
Dept. of Fisheries and Oceans
Science Branch
P. O. Box 5667
St. John's NF A1C 5X1

Tel. (709) 772-4410
Fax: (709) 772-3578
e-mail: porterr@athena.nwafc.nf.ca

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Science Branch
Dept. of Fisheries and Oceans
Newfoundland Region
P.O. Box 5667
St. John's NF A1C 5X1
(709) 772-4355
e-mail address: gperry@athena.nwafc.nf.ca
Internet address: http:\\www.nwafc.nf.ca